CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 72-81

WASTE DISCHARGE REQUIREMENTS
FOR
SHELL OIL COMPANY

The California Regional Water Quality Control Board, San Francisco Bay Region finds:

1. Shell Oil Company discharges 4.5 mgd of process wastewater from the company's 103,000 barrel per day petroleum refinery into Suisun Bay at Shell's Martinez Wharf. Treated process wastewater is accumulated in a holding pond and discharged at cyclic flow of 10,000 gpm for about 6-1/2 hours each day during periods of maximum tidal flushing. During wet weather storm water is discharged at 4 additional points into tributaries of Suisun Bay.

2. The Board adopted an Interim Water Quality Control Plan for the San Francisco Bay Basin in June 1971.

3. The beneficial uses of Suisun Bay as set forth in the Interim Basin Plan include:

   a. industrial water supply
   b. municipal water supply (seasonally at Mallard Slough)
   c. recreation
   d. esthetic enjoyment
   e. preservation and enhancement of fish and wildlife
   f. navigation

4. The requirements hereinafter prescribed are necessary to implement the Basin Plan for San Francisco Bay, protect the beneficial uses of Suisun Bay, and prevent nuisance.

5. The Board has notified the discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for Shell Oil Company.

6. The Board in a public meeting heard and considered comments pertaining to the discharge and the requirements prescribed herein.

IT IS HEREBY ORDERED, Shell Oil Company shall comply with the following:

A. Discharge Specifications - Process Wastewaters

1. Neither the treatment nor the discharge shall create a nuisance as defined in Section 13050(m) of the California Water Code.

2. Representative samples of the discharge shall not contain constituents in excess of the following limits:

Constituent	Units	Mean	Maximum
Settleable matter	ml/l/hr	0.1	0.5
5 day 20°C BOD	lbs/day	1,800	3,400
Ammonia (N)	lbs/day	940	1,880
Phenol	lbs/day	9	14
Total Sulfide	lbs/day	40	60
Total Chromium	lbs/day	9	14
Toxicity Emmission Rate 1/	(Toxicity Units)(mgd)	4.2	10.4
Oil and Grease	lbs/day	1,000	2,000
Zinc	lbs/day	10.0	15

3. The process wastewater shall receive an initial dilution such that the concentration of the waste in the receiving waters is less than 1/20 of the 96 hour median tolerance limit (TLm) of the waste. If the TLm exceed 100 percent this requirement does not apply.

4. The discharge shall not have a pH of less than 7.0 nor greater than 8.5; or 6.5 to 8.5 when the natural ambient value is as low as 6.5. Less restrictive effluent pH specifications may be prescribed if the discharger demonstrates that aquatic biota are not adversely affected by these levels.

5. At a point in the waste treatment process where all sanitary wastes are present, the median most probable number of coliform organisms in any 30 day period shall not exceed 230 MPN/100 ml, nor shall any value exceed 10,000 MPN/100 ml.

6. The discharge shall not exceed the natural temperature of Suisun Bay by more than 20°F.

B. Discharge Specification - Storm Waters

1. Neither the treatment nor the discharge shall create a nuisance as defined in Section 13050(m) of the California Water Code.

1/ The limits on toxicity emission rates will not apply if the mean toxicity concentration is less than 0.59 toxicity units and the maximum toxicity concentration is less than 0.87 toxicity units.

2. A representative sample of the discharge shall not contain constituents in excess of the following:

Constituent	Unit	Maximum
Settleable matter	ml/l/hr	0.5
Oil and Grease	mg/l	15

C. Discharge Specifications - Receiving Waters

1. The discharges shall not cause:

a. Floating, suspended, or deposited macrosopic particulate matter or foam in waters of the State at any place;

b. Bottom deposits or aquatic growths at any place;

c. Alteration of turbidity or apparent color beyond present natural background levels in waters of the State at any place;

d. Visible, floating, suspended or deposited oil or other products of petroleum origin in waters of the State at any place;

e. Tidal waters of the State to exceed the following limits of quality at any place within one foot of the water surface:

Dissolved oxygen	Minimum - 5.0 mg/l Annual median - 80% saturation When natural factors cause lesser concentrations, then this discharge shall not cause further reduction in the concentration of dissolved oxygen.
pH	A variation from natural ambient pH by more than 0.1 pH units

f. Tidal waters of the State to exceed the following limits of quality:

Toxic or other Deleterious Substances	None shall be present in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife or waterfowl or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration.

2. The discharges shall not cause a surface temperature rise greater than $4^{o}F$ above natural temperature of Suisun Bay.

D. Provisions

1. Mean values shall be based on the running average of samples representive of the discharge over any 30 day period.

2. Shell Oil Company shall immediately take all possible measures to achieve compliance with the discharge specifications in this order and shall submit to the California Regional Water Quality Control Board, San Francisco Bay Region, by December 15, 1972, a report delineating the immediate measures that have been or will be taken.

3. Shell Oil Company shall comply with the following time schedule to assure compliance with the requirements of this order:

Task	Completion Date	Report of Compliance Due
Develop a work plan to meet discharge requirements and to study the reduction of heavy metals used for cooling water treatment.	December 1, 1972	December 15, 1972
Develop a conceptual plan and detailed time schedule for completion of final plans, award of contracts, completion of construction and compliance with requirements.	December 1, 1973	December 15, 1973
Comply with temperature requirements	January 1, 1976	January 15, 1976

4. The requirements prescribed by this order amend the requirements prescribed by Resolution No. 68-26 adopted by the Board on April 30, 1968, which shall remain in full force and effect until the date Shell Oil Company is to be in full compliance with these requirements pursuant to a complete time schedule adopted by this Board.

5. This Order includes items 1, 6, 7 and 8 of the attached "Reporting Requirements" dated September 11, 1972.

6. This Order includes items numbered 1 through 6 of the attached "Notifications" dated January 6, 1970.

I, Fred H. Dierker, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region on September 26, 1972.

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Executive Officer

DEFINITION OF TOXICITY TERMINOLOGY

a. Toxicity Concentration (Tc)

Expressed in Tocicity Units (tu)

$$Tc\ (tu) = \frac{100}{96\text{-hr. } TLm\%}$$

b. Median Tolerance Limit (TLm%)

The TLm shall be determined by static or continuous flow bioassay techniques using standard test species.

When it is not possible to measure the 96-hr. TLm due to greater than 50 percent survival of the test species in 100 percent waste, the toxicity concentration shall be calculated by the expression:

$$Tc\ (tu) = \frac{\log (100 - S)}{1.7}$$

S = percentage survival in 100% waste

c. Toxicity Emission Rate (TER)

Is the product of the effluent Toxicity Concentration (Tc) and the waste flow rate expressed as mgd.

TER (tu x mgd) = Tc (tu) x Waste Flow Rate (mgd)